

# **APPARATUS FOR ADAPTING A CONTAINER CONTAINING ARTILLERY ROCKETS TO A LAUNCHER APPARATUS FOR ARTILLERY ROCKETS**

## **5        Background of the Invention**

10        The present invention relates to an apparatus for the adaptation  
of a container, which is adapted to contain a plurality of artillery  
rockets, to a launching apparatus for artillery rockets, wherein a box-  
like launcher frame is provided that is disposed on a support structure,  
especially a vehicle chassis, and is pivotable in elevation and azimuth,  
wherein at least one container, which has a right-angled cross section  
and contains a plurality of artillery rockets, is adapted to be inserted  
from one end into the launcher frame, and wherein in the past the outer  
dimensions of the container were adapted to the inner dimensions of  
15        the launcher frame.

20        A launcher apparatus for artillery rockets of this type disposed  
on a military vehicle is known, for example, from US Patent 5,461,961.  
With this known launcher apparatus, the containers, which contain the  
artillery rockets, must be adapted precisely to the inner dimensions of  
the launcher frame. This means that if artillery rockets or guided  
missiles of a different type are to be fired, the launcher apparatus must  
be appropriately adapted, which represents a considerable expense.

It is therefore an object of the present invention to provide an apparatus for the adaptation of a container, which is adapted to contain a plurality of artillery rockets, to a launcher apparatus of the aforementioned general type for artillery rockets, wherein such an apparatus, without alteration of the launcher apparatus, makes it possible to fire artillery rockets of a different type that are disposed in a container having other outer dimensions.

#### Brief Description of the Drawings

This object, and other objects and advantages of the present invention, will appear more clearly from the following specification in conjunction with the following schematic drawings, in which:

Fig. 1 shows a perspective illustration at an angle from behind onto a military vehicle having a launcher apparatus for artillery rockets;

Fig. 2 shows a perspective illustration of a conventional container, which contains six artillery rockets, for discharge from a launcher apparatus as shown in Fig. 1; and

Fig. 3 shows a perspective illustration of a container having different dimensions than those of the conventional container and being provided with adaptation or

adjustment modules for the discharge from a launcher apparatus as shown in Fig. 1.

### Summary of the Invention

5           The resolution of the aforementioned object is realized pursuant to the present invention in that for a container having outer dimensions that are smaller than the inner dimensions of the launcher frame, there is disposed on the upper side and/or the underside of the container a respective adjustment module in the form of an essentially rectangular  
10       flat panel that can be secured to the container, with the outer dimensions of the adjustment module or modules being such that when they are disposed upon the container, the outer dimensions of the thus formed unit, composed of the container and the adjustment module or modules, correspond to the inner dimensions of the launcher frame.

15           The basic concept of the present invention is that where the outer dimensions of a container that is to be used deviate from the inner dimensions of a launcher frame, it is possible to dispose on the upper side and/or the underside of the container a respective adjustment module that is embodied in such a way that after one or two  
20       adjustment modules are placed and secured upon the container, the container has precisely the outer dimensions that make it possible to insert it into the launcher frame and secure it there. In this connection,

it has been shown to be expedient to dispose on the outer sides of the adjustment modules, in other words on the upper side of the upper adjustment module and the underside of the lower adjustment module, securement devices that on the one hand are necessary in order to  
5 mount and transport the container, and on the other hand are necessary for securing the container in the launcher frame. The adjustment modules thus form a weapon interface that makes it possible, without altering the mechanical interface of the launcher apparatus, to use other artillery rockets or guided missiles.

10 An adjustment module placed upon the upper side of the container can be embodied as a transport module that is provided on its outer side with at least one support or suspension device that is designed for the transport of the container.

15 An adjustment module placed upon the underside of the container can be embodied as a locking module that is provided on its outer side with securement devices for securing the container in the launcher frame.

Further specific features of the present invention will be described in detail subsequently.

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### Description of Preferred Embodiments

Referring now to the drawings in detail, Fig 1 shows a military vehicle having a vehicle chassis 1, on which is disposed a cab 2, and also having a launcher apparatus for artillery rockets, with the apparatus being provided with a launcher frame 3 for accommodating the rockets. The launcher frame 3 is disposed on an upper carriage or mount 4 in such a way that it is pivotable in elevation. The upper mount 4 is mounted on the vehicle chassis 1 in such a way that it is pivotable in azimuth by means of a non-illustrated intermediate frame and a turntable. The pivoting movement in elevation is effected by an electrically driven elevated spindle or screw 5 that is disposed between the upper mount 4 and the launcher frame 3. Inserted into the box-like launcher frame 3, from the ends, are two containers 6 that can each accommodate six artillery rockets. The loading of the launcher frame 3 is carried out with hoisting means that each have two support arms 7 on which, in a manner not expressly illustrated, are disposed hoisting units.

Illustrated in Fig. 2 is a conventional container 6 that can be inserted into the launcher apparatus of Fig. 1. The container is frame-like, and is comprised of longitudinal and transverse members. Visible in Fig. 2 are the longitudinal members 6.1, 6.2 and 6.3, as well as

transverse members that extend in the horizontal and vertical directions, two of which, by way of example, are provided with the reference numerals 6.5 and 6.6.

5 Disposed in the container 6 are six artillery rockets 8. On the upper side of the container 6 there is disposed a securement device 9 for the transport of the container, and disposed on the underside are securement devices 10.1, 10.2 and 10.3 for securing the container 6 within the launcher frame 3.

10 Fig. 3 shows a container 11 that in a non-illustrated manner can contain a plurality of artillery rockets, and the outer dimensions of which are smaller than the inner dimensions of the launcher frame 3, so that this container cannot be inserted into the launcher frame 3 and secured there. To achieve this, there is disposed on the upper side of the container 11 an adjustment module 12.1, and on the underside of  
15 the container 11 an adjustment module 12.2. The length, width and thickness of each of the two adjustment modules 12.1 and 12.2 are dimensioned in such a way that the dimensions of the length, width and height of the unit composed of the container 11 and the two adjustment modules 12.1 and 12.2 correspond precisely to the corresponding inner  
20 dimensions of the launcher frame 3, thus enabling insertion into the launcher frame. The adjustment modules 12.1 and 12.2 are embodied as flat plates or panels of aluminum or steel, and are reinforced by

longitudinal rails 13.1 and 13.2. The securement of the adjustment modules 12.1 and 12.2 to the container 11 is effected via non-illustrated securement devices.

5           Disposed on the upper side of the adjustment module 12.1, which is embodied as a transport module, is a support or suspension device 15, for the suspension of the container on a hoisting unit, as well as collapsible or pivotable transport hooks or loops 14.1, 14.2, 14.3 and 14.4. Disposed on the underside of the adjustment module 12.2, which is embodied as a locking module, are non-illustrated  
10       securement devices for the securement within the launcher frame 3.

          The specification incorporates by reference the disclosure of German priority document 202 14 679.0 filed September 23, 2002.

          The present invention is, of course, in no way restricted to the specific disclosure of the specification and drawings, but also  
15       encompasses any modifications within the scope of the appended claims.